

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KAZUNARI TAKEDA,  
TOMOHIKO NODA, SYUICHI IZUCHI,  
and TOKUO INAMASU

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Appeal No. 97-1897  
Application No. 08/513,419

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HEARD  
October 23, 2000

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Before John D. Smith, Lieberman, and Timm, Administrative Patent Judges.

Lieberman, Administrative Patent Judge.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner refusing to allow claim 8, the sole claim pending in this application.

**THE INVENTION**

The invention is directed to a secondary battery comprising cathode and anode composite materials containing an electrolyte and an ion conductive cross-linked high-molecular weight polymer prepared from the polymerization of polyethylene glycol polypropylene glycol di(meth)acrylate, with the optional presence of the mono(meth)acrylate. The anode composite further contains carbon material as a negative active material.

**THE CLAIM**

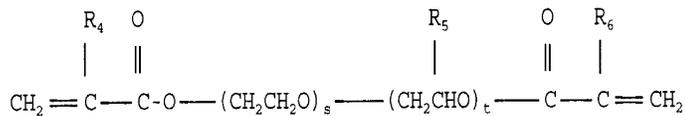
Claim 1 is illustrative of appellants' invention and is reproduced below.

8. A secondary battery comprising a cathode composite, an electrolyte, and an anode composite containing carbon material as a negative active material; said electrolyte comprising an ion-conductive cross-linked high-

molecular weight polymer, an ionic compound, and an organic compound which can dissolve said ionic compound; both the cathode composite and the anode composite comprising the ion-conductive cross-linked high-molecular weight polymer; said ion-conductive cross-linked high-molecular weight being formed by polymerizing a high-molecular weight compound having a reactive double bond and a polyether structure to thereby form a cross-linked network structure, said high-molecular weight compound comprising a compound of the formula (II):

and, optionally, a compound of the formula (I)

wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, and R<sub>6</sub> are hydrogen or lower alkyl having from 1 to 5 carbon atoms, m and n are integers lying in the range of m ≥ 1, n ≥ 0, and n/m = 0 to 5, and s and t are integers lying in the range of s ≥ 3, t ≥ 0, and t/s = 0 to 5;

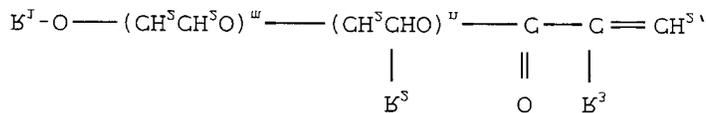


wherein the ion-conductive high-molecular polymer includes at least one of ethylene oxide polymer and ethylene oxide-propylene

oxide polymer; and

wherein at least one of the cathode composite and the anode composite further comprises a binder.

**THE REFERENCES OF RECORD**



As evidence of obviousness, the examiner relies upon

the following references.

Takahashi et al. (Takahashi)	4,908,283	Mar. 13, 1990
Izuti et al. (Izuti)	5,240,791	Aug. 31, 1993

Hideaki et al. (EP '578)  
(Published European Patent Application)

0 404 578

Dec. 27, 1990

#### THE REJECTION

Claim 8 stands rejected under 35 U.S.C. § 103 as being unpatentable over EP '578 in view of Izuti and Takahashi.

#### OPINION

We agree with the appellants that the rejection under 35 U.S.C. § 103 is not well founded. Accordingly, we do not sustain this rejection.

#### *The Rejection under 35 U.S.C. 103*

“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability,” whether on the grounds of anticipation or obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). On the record before us, the examiner relies upon a combination of three references to reject the claimed subject matter and establish a *prima facie* case of obviousness. The basic premise of the rejection is that it would have been obvious to one of ordinary skill in the art “to have a solid polymer electrolyte in a secondary battery.” See Answer, page 4. We disagree with the statement of the premise and the conclusions therefrom reached by the examiner.

We find that the EP '578 reference discloses a secondary battery having an improved negative electrode. See column 1, lines 6-9 and column 2, lines 38-45. The negative electrode layer comprises a composite of carbonaceous material and a polymeric solid electrolyte. *Id.* However, as stated by the examiner, “[t]he reference does not include a binder in its composite, the polymer is not described with the identical formulas as the instant claim and the electrolyte is not included in the cathode composite.” See Answer, pages 3 and 4. In addition, we find no disclosure that the polymeric electrolytes of EP '578 are crosslinked.

As for the reference to Izuti which discloses the polymer electrolyte of the claimed subject matter, we find that the polyelectrolyte is mixed with an ionic salt electrolyte and prepared in film form. See column 3, lines 33-41 and the Examples. However, although there is a disclosure of utility in secondary batteries, column 1, lines 6-9, there is no

disclosure or suggestion that the crosslinked polyelectrolyte of Izuti replace the non-crosslinked polyelectrolyte of EP '578.

Similarly, Takahashi discloses that acrylate polyelectrolyte comprising an acryloyl denatured polyalkylene oxide may be included in cathodic composites. See column 5, lines 59-66, column 6, lines 62-66 and Example 23. However, on the record before us, there is no disclosure or suggestion of replacing the non-crosslinked polyelectrolyte of EP '578 with acryloyl denatured polyalkylene oxide of Takahashi. Nor is there a suggestion or disclosure for replacing the positive electrode of EP '578 with the positive electrode of Takahashi.

In summary, the examiner has chosen elements from each of the references of record and combined them to form the invention of the claimed subject matter. However, the examiner must show reasons that the skilled artisan confronted with the same problems as the inventor and with no knowledge of the claimed invention would select the elements from the cited prior art references for combination in the manner claimed. We determine that there is no reason, suggestion, or motivation to combine the references in the manner proposed by the examiner. Accordingly, the examiner has not established a *prima facie* case of obviousness and the examiner's rejection of claim 8 under 35 U.S.C. § 103 is not sustained. *In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1455 (Fed. Cir. 1998).



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